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| EXAMINER | |
|---|---|
| HAMA, JOANNE | |
| **ART UNIT** | **PAPER NUMBER** |
| 1632 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/511,918 | MI ET AL. | |
| | Examiner | Art Unit | |
| | JOANNE HAMA | 1632 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *7-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

Applicant filed a response to the Non-Final Action of April 21, 2008 on July 21, 2008. Claim 1 is amended. Claims 7-23 are withdrawn. Claim 24 is new.

Claims 1-6, 24, drawn to a composition comprising an adenoviral vector, are under consideration.

This application contains claims 7-23 drawn to an invention nonelected with traverse in the reply filed on January 30, 2008. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

### ***Maintained Rejection***

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6 remain rejected under 35 U.S.C. 103(a) as being unpatentable over You et al., 2000, The Journal of Immunology, 165: 4581-4592, in view of Bout et al. US Patent 6,913,922, patented July 5, 2005, for reasons of record, April 21, 2008.

Applicant's arguments filed July 21, 2008 have been fully considered but they are not persuasive.

Applicant indicates the Examiner has failed to show a prima facie case of obviousness because there is no motivation to combine the teachings of the cited prior art references to arrive at the presently pending claims. Specifically, there is no motivation to combine the retroviral vector taught by You et al. with the adenoviral vector taught by Bout et al. Applicant refers to Takeda Chemical Industries v. Alphapharm and indicates that the Federal Circuit held that it remains necessary to identify some reasons that would have led a chemist to modify a known compound in a particular manner to establish a prima facie case of obviousness. The Court rejected the Appellant's "obvious to try" argument, as the Appellant failed to demonstrate that one of ordinary skill in the art would have chosen the prior art compound to modify from the millions of possibilities (Applicant's response, page 11). In response, Takeda Chemical Industries v. Alphapharm is nonanalogous to the instant situation. The rejection at hand indicates that that adenoviral vectors were known at the time of filing and that adenoviral vectors have the ability to efficiently transduce dendritic cells (DCs). As such, an artisan would have taken the retrovirus system of You et al. and substituted it with the adenovirus system taught by Bout et al. Given that the art teaches that both adenoviral and retroviral vectors can be used to transduce DCs, it would have been obvious to substitute the retroviral vector taught by You et al. with that of the adenoviral vector of Bout et al.

Applicant indicates that in the instant case, You et al. describe a retroviral vector system containing a fusion protein with a cell-binding domain and a leader sequence and do not describe that the retrogen cassette can be inserted into an adenoviral

system. Bout et al. do not cure the deficiencies of You et al. as Bout et al. describe an adenoviral system containing one adenovirus capsid protein and a gene of interest. Bout et al. do not teach the inclusion of a retrogen cassette. Applicant indicates that the retrogen cassette technology allows presentation of antigens to both MHC-I and MHC-II, as well as potently activating Th, CTL, and B cells. Bout et al. lack this retrogen cassette insert. Further Bout et al. do not teach that their adenoviral vectors present both MHC-I and -II (Applicant's emphasis, Applicant's response, page 12). In response, this is not persuasive. Concluding obviousness is not limited to the art providing specific teaching, suggestion, or motivation to combine the references. Rather rationales that support a conclusion of obviousness include simple substitution of one known element for another to obtain predictable results (see MPEP 2143). In the instant situation, You et al. teach a retrogen cassette in a retroviral system. You et al. differ from the claimed invention in that instead of an adenoviral vector, You et al. teach a retroviral vector. Bout et al., at the time of filing, teaches that adenoviral vectors were known and that adenoviral vectors can transduce DCs efficiently. Given this teaching by Bout et al., an artisan would have substituted the retroviral vector of You et al. for that of an adenoviral vector because Bout et al. teach that it is an expression system and that it can transduce DCs efficiently. With regard to Bout et al. lacking a retrogen cassette, or that Bout et al. do not teach that adenoviral vectors present both MHC-I and -II, it is noted that the rejection is not a 102 rejection, wherein Bout et al. anticipate the claimed invention. Rather, the Examiner has relied upon the combined teachings of You et al., and Bout et al. to arrive at the claimed invention.

Applicant indicates that a person of ordinary skill would not reasonably expect that a retrogen cassette inserted into a retrovial vector would achieve the same effect as a retrogen cassette inserted into an adenoviral vector. Adenoviruses are DNA viruses and retroviruses are RNA viruses and each has its own replication strategy, and in turn, each has different ways DNA is integrated into the host cell. An artisan cannot reasonably predict that the same insert will function in the same manner and become integrated in the host cell in the same way using two different viral vectors that infect host cells differently (Applicant's response, page 13-14). In response, this is not persuasive. The art at the time of filing (e.g. see Robbins et al., 1998, Pharmacol. Ther. 80: 35-47) teaches that various viral vectors are routinely used to deliver a gene of interest. While Applicant indicates that an artisan cannot predict that the same insert will function in the same manner in a host cell, Applicant does not provide any evidence regarding this issue, such that an artisan would not have substituted a retroviral vector for an adenoviral one.

Thus, the claims remain rejected.

Claim 24 is newly rejected under 35 U.S.C. 103(a) as being unpatentable over You et al., 2000, Journal of Immunology, 165: 4581-4592, previously cited, in view of Havenga et al., WO 02/24730, published March 28, 2002.

As indicated in the Office Action, April 21, 2008, page 5, You et al. teach a antigen (Ag) presentation strategy that transduces dendritic cells (DC) to produce an Ag for presentation as an exogenous AG to efficiently induce both humoral and cellular

immunity (You et al., abstract). You et al. teach a retroviral construct that was used to transduce DCs. The construct comprised a nucleic acid sequence encoding a fusion protein of a $V_H$ signal leader sequence, hepatitis B virus (HBV) nucleocapsid protein (HBeAg), and a cell-binding of the Fc fragment of IgG (You et al., page 4581, under "Construction of expression vectors" and Figure 1A).

While You et al. teach a retroviral vector, they do not teach an adenoviral vector compriisng a subgroup B adenoviral capsid fiber selected from the group consisting of Ad14, Ad21, Ad34, and Ad50.

Havenga et al. describe a gene delivery vehicle that has a tropism for dendritic cells. In this vehicle, the virus capsid includes protein fragments derived from at least two different viruses, such as an adenovirus (e.g. an adenovirus of subgroup B such as a fiber protein derived from a subgroup B adenovirus) (Havenga et al., page 7, line 28 to page 8). In a specific embodiment Havenga et al. teach that Ad5Fib50 (adenovirus serotype 5 with fiber capsid protein from Ad50) was used in a study to transfect a gene of interest in a dendritic cell and was shown to be a potent vector that can be used as a vaccine delivery vehicle. Havenga et al. teach that these adenoviral vectors can be engineered to deliver and express antigenic proteins to antigen presenting cells (Havenga et al., page 21, lines 24-29).

Thus, it would have been obvious for an artisan to substitute the retroviral vector of You et al. with that of the Ad5Fib50 adenoviral vector taught by Havenga et al. An artisan would have done so because Havenga et al. teach that their adenoviral vectors are gene delivery vehicles and that transfect dendritic cells well.

Thus, the claim is obvious.

***Conclusion***

No claims allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joanne Hama, Ph.D. whose telephone number is 571-272-2911. The examiner can normally be reached Mondays, Tuesdays, Thursdays, and Fridays from 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Paras, can be reached on 571-272-4517. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

/Joanne Hama/
Primary Examiner
Art Unit 1632